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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/529,391	06/06/2000	JEFFREY S. HAGGARD	0818.0014C	7035

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EXAMINER

YAO, SAM CHAUN CUA

ART UNIT	PAPER NUMBER
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1733

12

DATE MAILED: 09/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/529,391	HAGGARD ET AL.	
	Examiner	Art Unit	
	Sam Chuan C. Yao	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-100 is/are pending in the application.
- 4a) Of the above claim(s) 22-100 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5-6</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group III species A (claims 1-21) in Paper No. 11 is acknowledged. The traversal is on the ground(s) that the shared technical feature should be taken as a whole. This is not found persuasive because, as noted in Paper No. 7, the special technical feature linking the various groups is either anticipated by or obvious over Mathes '156 for reasons set forth in numbered paragraph 2. The reasoning provided in numbered paragraph 2 provides a prima facie evidence that, the special technical feature, considering each independent claims as a whole, would have been anticipated by or obvious over the teachings of Mathes '156. Pike et al (US 5,759,926) along with Mizoe et al (US 5,790,926) are cited as further evidence that the special technical feature, taking the recited independent claim as a whole, does not define any contribution to the art. It is worth noting that, Mathes '156 teaches heating conjugated fibers comprising fibers of disparate heat-shrinkage to open and split the fibers (col. 5 lines 39-59). For detailed reasonings, see numbered paragraphs 3 and 5 below. It is acknowledge that, new art has been added to further strengthen Examiner's position that, the special technical feature, taking the recited independent claim as a whole, does not define any contribution to the art. Therefore, the restriction requirement should properly be made non-final. However, at the request of Counsel on page 4 2nd full paragraph, the restriction requirement is made FINAL.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1-2, 4, 7-9, 17, and 19-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Pike et al (US 5,759,926) and optionally as evidence, for example by, Yoshida et al (US 5,753,351) or Suzuki et al (US 5,814,569).

Pike et al discloses a process of forming a nonwoven fabric, the process comprises extruding splittable conjugate fibers, the fibers includes at least two incompatible polymers such as polyolefin-polyester (e.g. polyethylene-polyethylene terephthalate) pair, polyamide-polyester (e.g. nylon- polyethylene terephthalate) pair, etc.;

depositing the conjugate fibers onto a conveyor belt to form a web;

applying a blend of steam and hot air (i.e. heat) to the web to split the conjugate fibers; and then,

through-air bonding the steam heated web (abstract; col. 3 lines 45-62; col. 7 line 42 to col. 8 line 9; col. 9 lines 43-51).

Although not explicitly disclosed, the incompatible polymers taught by Pike et al in column 7 line 60 to col. 8 line 10 are taken to inherently have a relative difference in heat shrinkage in view that the polymer pairs are derived from different polymeric materials. It reasonably expected that since the polymeric materials are different and incompatible, they would have inherently have different intrinsic properties such as thermal shrinkage. Optionally, Yoshida et al (col. 1 line 64 to col. 2 line 8) and Suzuki et al (col. 4 line 44 to col. 5 line 6) are cited as evidence that, polyolefin-polyester pair and polyamide-polyester pair inherently have different relative heat shrinkage.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-9 and 12-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pike et al (US 5,759,926) in view Mizoe et al (US 5,790,926).

With respect to claims 1-2, 4, 7-9, 17, and 19-20, these claims were taken to be anticipated by Pike et al in numbered paragraph 3 above. The alternative rejection in this numbered paragraph is used, in an unlikely event, Applicant provides some evidence that the incompatible pair of polymers taught by Pike et al would not inherently have relative difference in thermal shrinkage. The

discussion of the Pike et al patent set forth in numbered paragraph 3 is incorporated herein.

Pike et al does not explicitly disclose using a pair of incompatible polymers which have a relative difference in heat-shrinkage. However, it would have been obvious in the art to use a pair of incompatible polymers which have a relative difference in heat-shrinkage in the process of Pike et al because it is old in the art to use conjugate fibers comprising incompatible thermoplastic materials having relative difference in heat shrinkage and to heat the conjugate fibers to open and split the fibers as exemplified in the teachings of Mizoe et al (col. 5 lines 16-59). The motivation to incorporate an old technique of splitting conjugate incompatible fibers disclosed by Mizoe et al in the process of Pike et al would have simply arise from a reasonable expectation that the old technique will perform in their desired intended purpose of effectively splitting conjugate incompatible fibers. Additional incentive for modifying the process of Pike et al would have simply been to obtain the expected advantage of simplifying the process and reducing the production cost (i.e. obviate the need to modify polymers to become hydrophilic, and obviate the need to dry a wet fiber web).

With respect to claim 3, one in the art would have readily recognized and appreciated that, the greater the relative difference in thermal shrinkage between a pair of incompatible polymers, the easier conjugate fibers would split when subjected to heat in the modified process of Pike et al. Moreover, one in the art would have determined, by routine experimentation, a workable relative

difference in thermal heat-shrinkage. For this reason, the limitation in this claim would have been an obvious expediency in the art.

With respect to claim 5, one in the art would have readily recognized and appreciated a suitability of using a radiant energy as well as other forms of thermal energies to split conjugate fibers having relative thermal shrinkage.

A preference on whether to use radiant energy or other form of thermal energy to split conjugate fibers is taken to be well within the purview of choice in the art.

None, but only the expected result of effectively splitting conjugate fibers would have been achieved.

With respect to claim 6, the modified process of Pike et al does not need to use hydrophilic polymers. The only requirement is to use two incompatible polymers with relative difference in thermal shrinkage. Note: the polymeric pairs in column 7 line 60 to col. 8 line 10 are generally non-hydrophilic.

With respect to claims 12-14, see figure 8 of Pike et al. One in the art would have determined a workable heating time in order to ensure an effective splitting of fibers is achieved. The heating time clearly depends on the degree in the relative difference in thermal shrinkage between a pair of incompatible polymers and the structure of the fibers. For instance, the ribbon-like fiber shown in 7 would be relatively easier to split than for example the circular fiber shown in figure 1 of Pike et al.

With respect to claim 15, Pike et al also teaches using polypropylene-polyethylene terephthalate (col. 8 line 1). The type of polyethylene terephthalate

recited in this claim is well known in the art. In fact, it is commercially available as evidence from Applicant's disclosure on page 9 line 30 to page 10 line 1.

With respect to claim 18, the limitation in this claim is notoriously well known in the art of attenuating fibers from a spinneret.

6. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references set forth in numbered paragraph 3 or 5 as applied to claim 1 above, and further in view of Hogle et al (US 5,277,976) or Harrington et al (US 5,985,193).

With respect to these claims, since: a) Pike et al is not restrictive as the shape of fibers, and also discloses the desirability of forming fibers with a "higher surface area"; b) it is well known in the art to form fibers having a cross-section with a shape of a cross as exemplified in the teachings of either Hogle et al (figures 4-8) or Harrington et al (figure 1f); and c) one in the art would have reasonably recognized and appreciated that, cross-shaped fibers would have a larger surface area than circular fibers, these claims would have been obvious in the art. One in the art would have understood that what is critical in the modified process of Pike et al is to have fibers with alternating segments of incompatible polymers with relative difference in heat shrinkage so that the fibers can effectively split upon exposure to heat.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Ueda et al (US 5,558,825) is cited as a reference of interest showing a process of forming fibers where a godet roll is used to draw extruded fibers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Chuan C. Yao whose telephone number is (703) 308-4788. The examiner can normally be reached on Monday-Friday with second Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael W Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7115 for regular communications and (703) 305-7718 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.



Sam Chuan C. Yao
Primary Examiner
Art Unit 1733

scy
September 4, 2002